

PROCEEDINGS OF THE BRITISH
KINEMATOGRAPH SOCIETY

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By Mr. Randal Terraneau

(Paper read before the British Kinematograph Society on Monday, 7th December, 1931)

It is a very great honour for me to describe the Dunning Process, because in my opinion this process has undoubtedly proved to be the greatest photographic invention since the advent of talking pictures, and I feel confident that when it is used here as universally as it is now used in the United States, you will all share my opinion.

I would like to point out that I do feel there has been a little doubt in this country as to the use of the process.

The process is one for obtaining moving backgrounds of almost any nature with intimate studio foreground action. It must not be confused with the method of obtaining ceilings and still background scenes which are covered by the split-matte and other systems, although when model and split-matte work is used in conjunction with the Dunning process, some very remarkable results can be obtained.

I would also like to say, in this connection, that there have been just lately many attempts in America to use projection for obtaining composite motion picture photography, the required background being projected on to a large ground-glass screen behind the foreground action. There are unsurmountable difficulties in this system, and it is rapidly dying out.

My reason for mentioning this is because the results are very often highly unsatisfactory, and as we, in this country, do not always know what is taking place on the other side, we say "Oh! the Dunning shots in so-and-so are not very encouraging." Only last week I read a newspaper report, "the Dunning shots are fairly adequate," whereas all the shots in question were obtained by use of projection, and there was not a single Dunning Process shot in this particular production.

The Dunning Process fundamentally is based upon the use of a coloured transparent background scene, used in connection with a coloured illuminated background behind the actors of the foreground scene during double exposure. In other words, a transparent positive of the background scene is made from any standard width developed negative. This transparency is loaded in an intermediate magazine placed between the regular raw stock magazine and the camera.

The raw stock passes through the intermediate magazine and into the exposure position in the camera jointly with the transparency contained in the intermediate magazine. The latter is in front of and in contact with the raw stock. This transparency, as made at present, carries an orange image in its shadow positive portions and a neutral orange in its highlight portions. This gives it an equal filter absorptive value over its entire area, and renders it an equivalent to a heavy overall "K" filter. Therefore, if the actors and all portions of the foreground components of a composite photograph are illuminated with, say, a yellow light, they will be photographed through the transparency representing the background components, and their image will be impinged *solidly* upon the raw stock in the same manner as would occur if they were

photographed through an overall "K" filter. This summarises the first phase, or consideration, which naturally is to secure a solid original negative of actors through a given scene without a selective exposure obstruction caused by the transparency placed in front of the raw stock.

The second phase, as practised now, occurs automatically and simultaneously with the first phase. It is a printing and not a photographic operation. In other words, behind the actors, and preferably out of focus, is a flat wall or curtain illuminated with blue light, approximately complementary to the orange image of the transparency in the camera. This is large enough to act as a printing light for the entire area of the transparency frame, except those portions obstructed momentarily by the actors or foreground set. The blue light passes through the neutral portions of the transparency, but, unlike the yellow light from the actors, it is absorbed by the orange portions of the transparent background scene. And thus it creates around, and apparently behind, the actors on the same raw stock a printed contact negative exposure of the background scene. The result is a complete composite negative which is developed in the usual manner, and exhibition prints made therefrom along with the regular work in any commercial laboratory. In all cases the producer sees the finished results on the screen next morning, when he is viewing the "dailies" of the previous day. The composite negative of foreground and background being photographed simultaneously, there is no fringing or "white line" around the action, as occurs when the matte method is employed.

PROCESS BACKGROUNDS.

All scenes which are to be used as process backgrounds should be selected with care. Process work is effective only when well done, very important roles being played by the following elements: Quality, over-emphasis, focus perspective, angle, the height, and the steadiness.

Quality.—To obtain the best backgrounds, one should try for a normal quality negative, normally developed. Under-exposed and over-developed negatives are apt to be grainy, and may show even a slight increase of graininess in process work.

Negatives which have been highly over-corrected by using coloured filters may appear muddy in landscapes unless the sky areas are well broken up by cloud effects.

Over-emphasis.—Halation is another fault of such negatives. Over-exposed negatives often have so much contrast that it becomes very difficult to avoid phantom effects; that is, the high lights of the transparency may be so empty as to make it difficult to obtain a value for the absorption filter for the dispositive portions which will correspond to the shadows of the positive portions in the transparency.

Focus.—This is an important point when shooting backgrounds. Some argue, and quite rightly, that all close-ups and medium shots in straight photography show a background either out of focus or blurred. Others claim that such results are due simply to the inherent limitations of ordinary photography, and need not be duplicated if they can be overcome by process photography. When the eye is focussed on a near-by object, it does not see the distant scene simultaneously; but it momentarily and rapidly focusses from one plane to another, and registers the composite sharp impression of planes at all distances from it. Experience shows that it is better to shoot a background scene focussed comparatively sharply; and then, if necessary, to soften it either by printing by optical means when making the transparency, or by controlling the illumination when making the double exposure. Therefore, all backgrounds should be focussed from 25 feet to infinity. Fifty mm. lenses are used in most cases.

Perspective.—The most important accessories required when shooting backgrounds are an excellent imagination and a bevel protractor obtainable at any hardware store. The cameraman should see in his mind's eye the foreground action that is later to be incorporated into the composite picture. Perhaps it is to be a scene showing a ten-foot length of steamer deck backed by a railing, with the rolling ocean beyond doubled in. Several passengers are to be placed in steamer chairs, and two lovers are going to lean on the rails. Although the camera is directed over the railings of the boat from which he is photographing nothing but an empty ocean, the cameraman must envision the scene we have described as if it were actually before him. He should realise that such a foreground scene, shot later on a stage, will occupy at least the lower half of the finished picture. By placing the bevel protractor along the top of the camera, he will find that it is tipped down perhaps 10 degrees, and that the distant horizon is about three-fourths up from the bottom of the picture. This means that the finished picture will include deck action in the lower half, ocean in the next quarter, and sky in the remaining quarter.

When the foreground is doubled later on the stage, the camera must be set at the same angle, in this case 10 degrees, for if it were placed horizontally, the picture obtained

would show a horizontal ship steaming on an ocean running uphill into the horizon. On the other hand, if the background were shot with the camera horizontal, and with the horizon below the centre, there would be no ocean in the finished picture.

Every form of transportation is utilised in the changing scenes of motion picture stories, and for this reason there is a demand for moving backgrounds, such as landscapes from train windows, 'buses, aeroplanes, taxis, etc. The average length of such backgrounds should be at least 100 feet, or enough for about a minute of dialogue and action. Most sequences can be covered within this length.

Angle.—The favourite form of shot used for running street scenes is the straight rearward receding shot. This permits shooting into the faces of the actors when doubling in the foreground action. Forward shots are preferable for thrills because they furnish the audience with a sense of impending danger. Shots taken at right angles to the line of travel are excellent for enhancing the illusion of speed. It must always be remembered that the angle of tilt of the background camera must be duplicated when doubling in the foreground action.

When photographing a rearward receding background, one should not shoot diagonally across the car on the stage merely because the director wants to play his action in that fashion. If that is done, the car will appear to skid sideways throughout the whole length of the finished picture.

Height.—It is very important that the height of the lens above the ground be taken into consideration. For example, in a taxi-cab shot it is not possible to use the background that has been taken from the top of a 'bus. A shot such as the latter would show the roofs of all the cars following, which naturally could not be seen from the rear window of a taxi. The best lens height for motorcar shots is six feet from the ground. The camera should be tilted slightly downwards so as to bring the interesting part of the background picture into the upper half where it will be seen through the rear window of the car. Having established the angle, height, and tilt, the background is photographed without panning or without making any other changes. Close-ups and medium shots of foreground action can be made with the same transparency.

Steadiness.—A camera used for photographing backgrounds should be driven by motor. The exposure fluctuations due to hand-cranking are very noticeable when doubled into a foreground action photographed with a motor-driven camera.

Weave, caused by hand-cranking, loose free-heads, strained internal mechanism, and unsteady tripods spoil to a great extent the effectiveness of process shots.

Camera mechanisms should be tested for steadiness, clamps should be used for free-heads, little jacks should be used for the front and back of the camera, and the tripod should be chained down if possible, for all stationary shots.

In conclusion, I would like to acknowledge the fact that some portions of this paper are extracts from Carroll H. Dunning's paper read before the S.M.P.E. at their Hollywood convention.

I now propose to show you a reel of film demonstrating the uses of the Dunning process.

The first scenes are actual process shots taken in American studios. Some of these, I would like to point out, are N.G. takes, as it is difficult to get prints from the good ones, but I think they will suffice to show the full advantages of the process. You will notice that about half way through the reel a portion of white spacing has been inserted. Following this spacing are shots which have been taken in English studios.

Note.—The foregoing lecture was read by Mr. Eveleigh, in the absence of Mr. Terraneau, who had been called away to illness in his family half-an-hour before the opening of the meeting. Mr. Eveleigh volunteered to attempt to answer any questions raised out of his knowledge of the process gained from his conversations with Mr. Terraneau and Mr. Bob Martin in arranging the paper.

DISCUSSION

MR. EVELEIGH: We are doubly unfortunate this evening, because I had arranged with Mr. Bob Martin, the R.K.O. Cinematographer, to come along and tell us some of his experiences in this country in the making of Dunning shots. Mr. Martin is still at the studio shooting and is likely to go on through most of the night. In several talks he has told me how the Dunning process was first used in this country. Mr. Martin is not a "special process" cinematographer, he is a studio man. The two are entirely different in the States. Whilst photographing a picture at Beaconsfield for A.R.P., he was told some Dunning shots were to be included and the requirements of the process explained to him. He went ahead with some trial and error experiments and then the scenes were shot. Up to date he has made four sets of Dunning shots and, as

he puts it : " They all came off first time and I'm wondering when the beginner's luck will break."

MR. HODGSON : Is a light used on the set, with a blue light behind it, and, if so, how is the balance arrived at ?

MR. EVELEIGH : I understand from Mr. Martin that the lighting is a case of trial and error. The result required is known, but no guarantee can be given that it will come off first time. That holds good, of course, with any " special process " work. I once saw an avalanche made in miniature. It had to be shot ten or twelve times before a result was obtained which was really convincing. I know of one Dunning shot which was taken 22 times before its makers were satisfied.

MR. HODGSON : What type of camera is used ?

MR. EVELEIGH : Mitchell or Bell & Howell adapted for multicolour are quite satisfactory. They have a special gate to take Bipack negative and double magazines. I understand that Debrie have a camera adapted to take Bipack now, but I have not seen it personally.

MR. HUDSON : Another question : the gauge of the positive and negative, naturally shrinkage will occur ?

MR. EVELEIGH : From what I have gathered, the picture is never used longer than a week after it is made. It is allowed to stand for two or three days to season, and the scene is then shot within a week.

MR. HODGSON : But it is a fact that the positive will not be the same as the negative.

MR. EVELEIGH : Naturally.

MR. HODGSON : How does the process stand with regard to colour photography ?

MR. EVELEIGH : I had a letter from Hollywood only last week in which it was stated that tests were being made in this process with a view to making shots in colour, but that they were unsuccessful. The whole question of colour technology is now being thoroughly explored.

MR. HODGSON : There is a definite limitation to the Dunning process at present then ?

MR. EVELEIGH : Undoubtedly. With any of the special processes the subject must be carefully chosen.

MR. PONTING : It occurred to me that the shot showing the sleigh coming down the sleigh run is incorrect. Having made your background, anything in the foreground must be made to synchronise. I hold that it is absolutely impossible for anyone or anything to go round the angle as that sleigh did. Whilst there is so much to praise it does not seem the right thing to criticise. However, another thing which struck me was that the lighting of background and foreground in some instances did not match. As regards the use of this process in some of the places I have been, I must say it would be marvellous to be able to use it. I have travelled quite a lot, and have obtained negatives in China, India, Japan, etc. It would be wonderful to put figures in such backgrounds. Supposing a negative had shrunk, would there be any difficulty about using it ? I am wondering if some of my old negatives could be used for backgrounds ?

MR. EVELEIGH : Any negative that will go through a projection printer may be used.

The Author would like to make the following observations, since he was unable to be present during the discussion.

Regarding balance of light, this balance is arrived at by means of hand tests developed on the set. Very little time is taken up by making these tests and a perfect balance is obtained. Every assurance can be given that it will " come off first time," and it is very seldom necessary to retake.

Dunning transparencies are made on Bell & Howell perforated stock, consequently the perforation pitch is the same as in negative stock.

As regards Dunning Process in colour cinematography, since the process is based on the utilisation of complementary colours, it is impossible to use it for colour work. No tests in this connection have ever taken place as it is quite obvious it could not succeed.

Mr. Ponting raised the question of the sledge scene, in which the foreground action is out of synchronisation with the background scene. It was for this very reason that I mentioned in my paper that several of the scenes to be shown were N.G. takes. This is one of them. In the actual take used the synchronisation was perfect.

Old negatives can be used for backgrounds provided they fulfil the general requirements dealt with in my paper under the heading " Process Backgrounds " and provided they are quite steady.

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